TXOGA

QUARTERLY ENERGY ECONOMICS OUTLOOK

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First Quarter 2025 Outlook

March 12, 2025

Key Points

Global, U.S., and Texas Economies

- Current economic indicators appear steady, but downside risks to official growth projections have become apparent
- Global GDP growth projections for 2025 and 2026 have been revised downward by 0.2 percentage points annually to 2.6%
- Primary risks stem from the strongest U.S. dollar foreign exchange rate on record and a prospective trade war
  - The Bank for International Settlements estimates tariffs could detract up to 1.5 percentage points from global GDP
  - Five goods categories constituted nearly 90% of the U.S. trade deficit in 2024, including products that are integral to daily consumer and industrial needs
- Record-high U.S. consumer debt and rising delinquencies could hamper credit access and reduce U.S. growth (70% of GDP driven by consumer spending)

Global Oil Market

- Global demand to reach 104.1 million barrels per day (mb/d) in 2025 (+1.3 mb/d y/y) and 105.2 mb/d in 2026 (+1.1 mb/d y/y)
- U.S. leads 2025 supply growth, plus an additional +1.0 mb/d of new supply from other non-OPEC nations
- OPEC+ supply policy remains a key variable but likely depends on demand growth and geopolitical developments
- Futures prices are aligned with their historical mean reversion threshold

Natural Gas Markets

- Global demand at a record high 148.7 trillion cubic feet in 2024 and expected to grow 1.8% y/y in 2025 and 1.5% y/y in 2026
- U.S. natural gas production has continued to reach record highs, driven by Texas and the Permian Basin
- With large recent storage withdrawals, working gas in underground storage stands in the middle of the 5-year range
- Futures prices have risen above their historical mean reversion threshold and are in contango (i.e., spot prices below futures prices)

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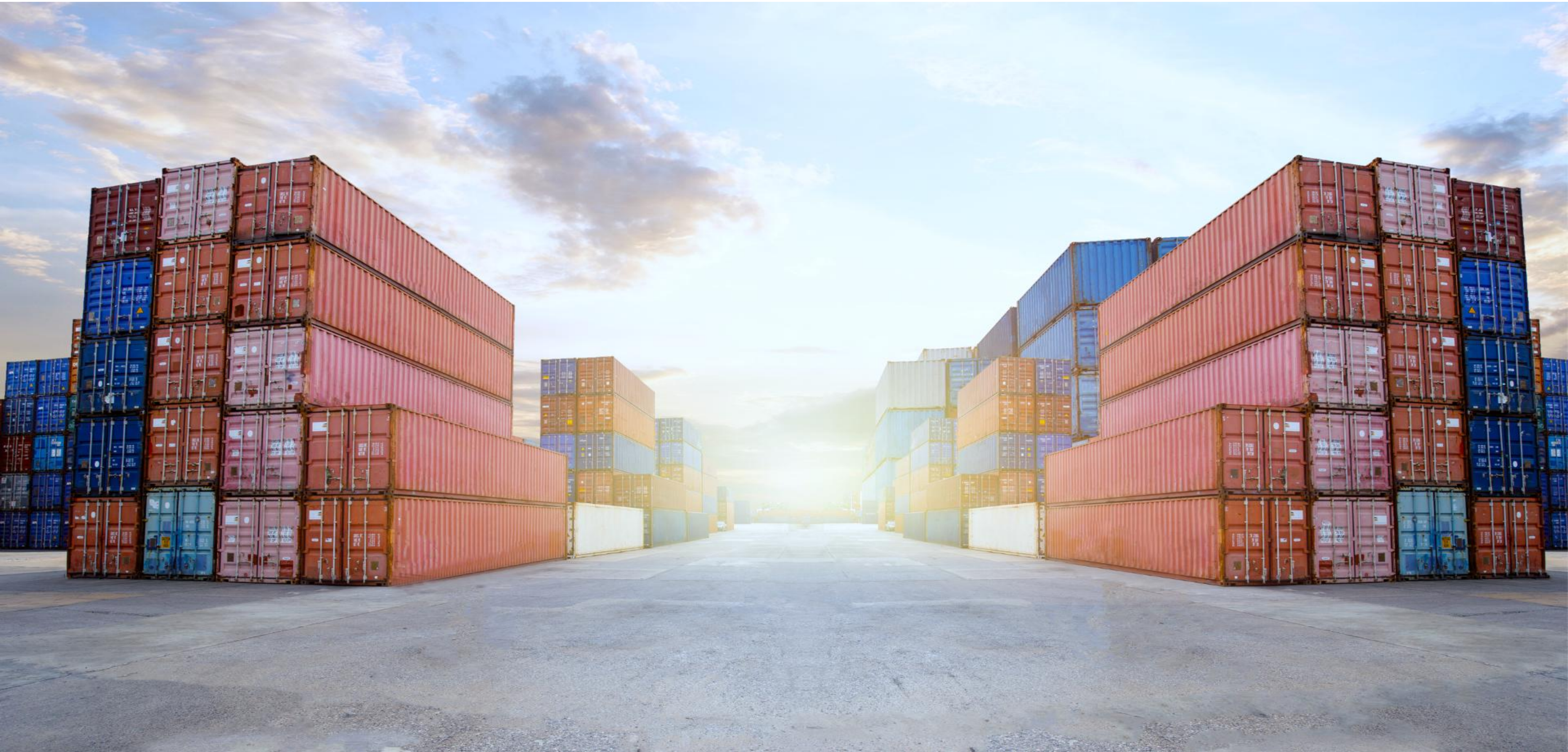
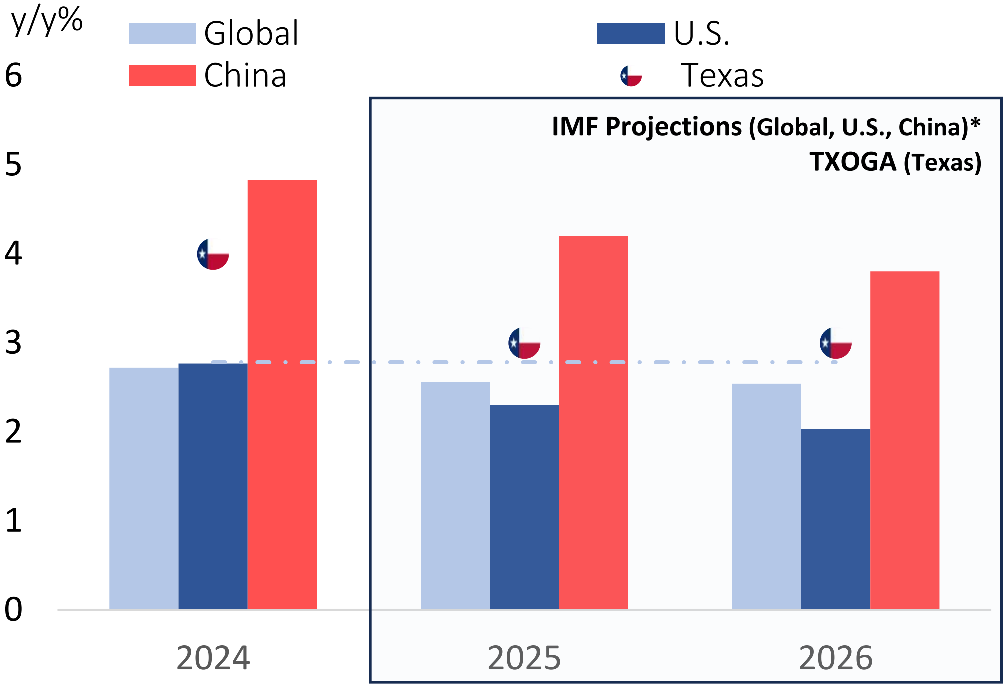
Global, U.S. and Texas Economies



Global GDP: Official growth expectations lowered for 2025, and the focus on dollar-denominated debt increases

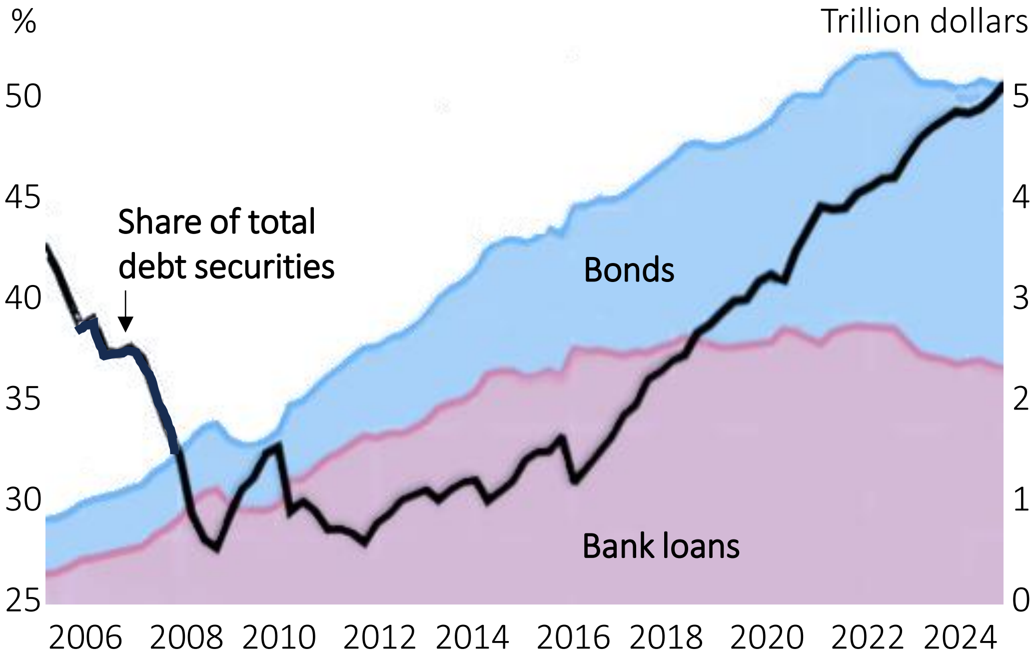
- Global GDP growth projections by the International Monetary Fund* (IMF) were lowered as we anticipated in Q1 2025—and currently call for slightly below-average growth of 2.6% per annum in 2025 and 2026*
- $5 trillion in U.S. dollar-denominated debt accounts for half of Emerging Market and Developing Economies' total credit, so debt service requirements have risen in local currency terms as the dollar has appreciated

Real GDP growth*



* Based on real GDP (2019 constant dollars) for 205 countries weighted on a market exchange rate basis
sources: International Monetary Fund; World Bank; TXOGA analysis

U.S. dollar-denominated credit to non-banks in Emerging Markets and Developing Economies (EMDEs)



source: Bank for International Settlements

A strong dollar has historically exerted downward pressure on oil prices

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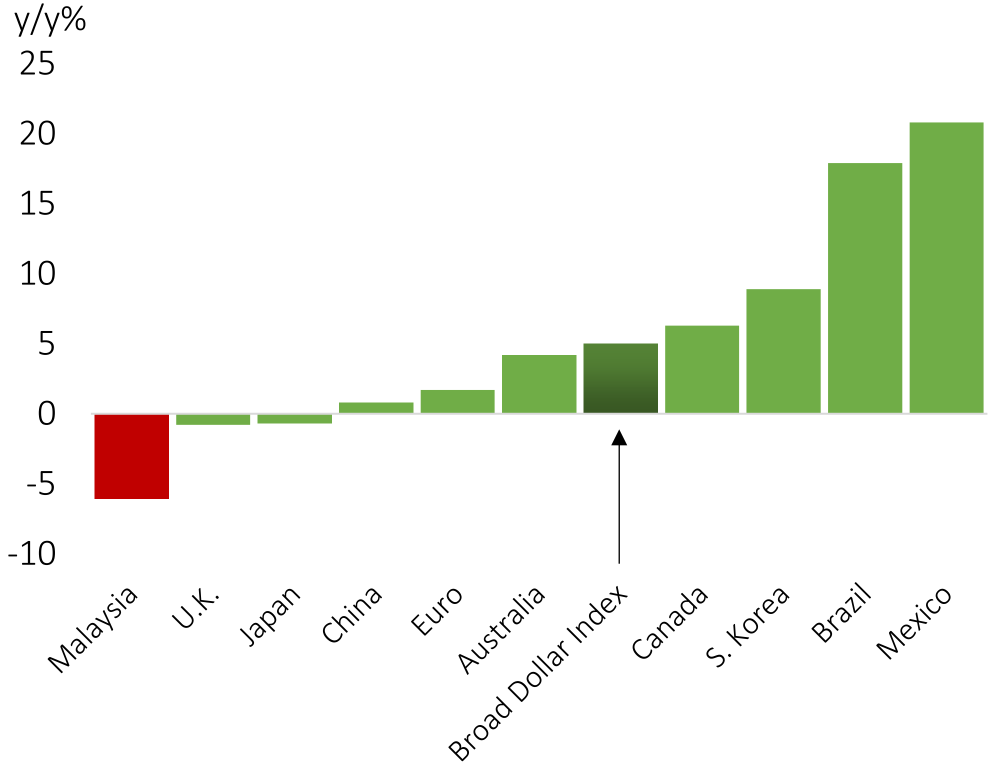
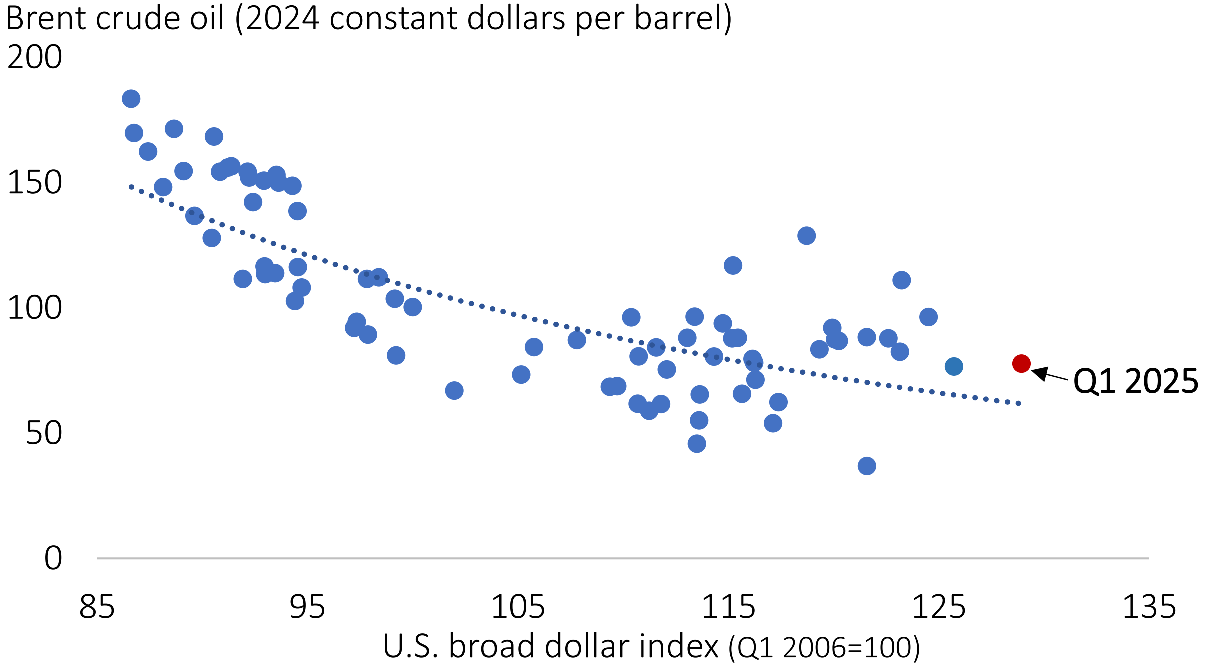
- In Q1 2025, the U.S. dollar has risen to its strongest exchange rate, as trading partners cut interest rates faster than the U.S. and as tariff policies escalated
- Although multiple factors influence global oil prices, the U.S. dollar's strength has historically exhibited an inverse relationship with oil prices due to its role in oil pricing, commodity trading, trade balances, and monetary policy effects
- Historically, a strong dollar has often led to lower oil prices as it raises the cost of crude for foreign buyers, reducing demand

U.S. dollar appreciation (depreciation) versus main trading partners' currencies, March 2025



sources: Federal Reserve Board

U.S. broad dollar index and Brent crude oil prices, Q1 2006-Q4 2024



sources: Federal Reserve Board; BLS; EIA; TXOGA analysis

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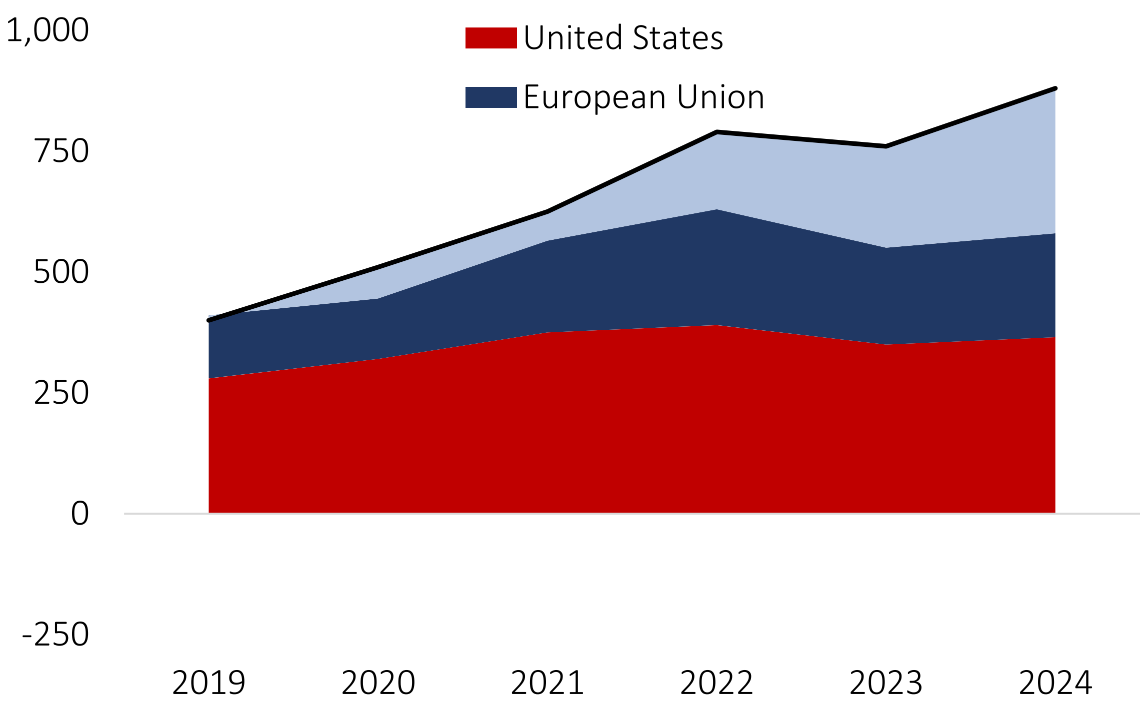
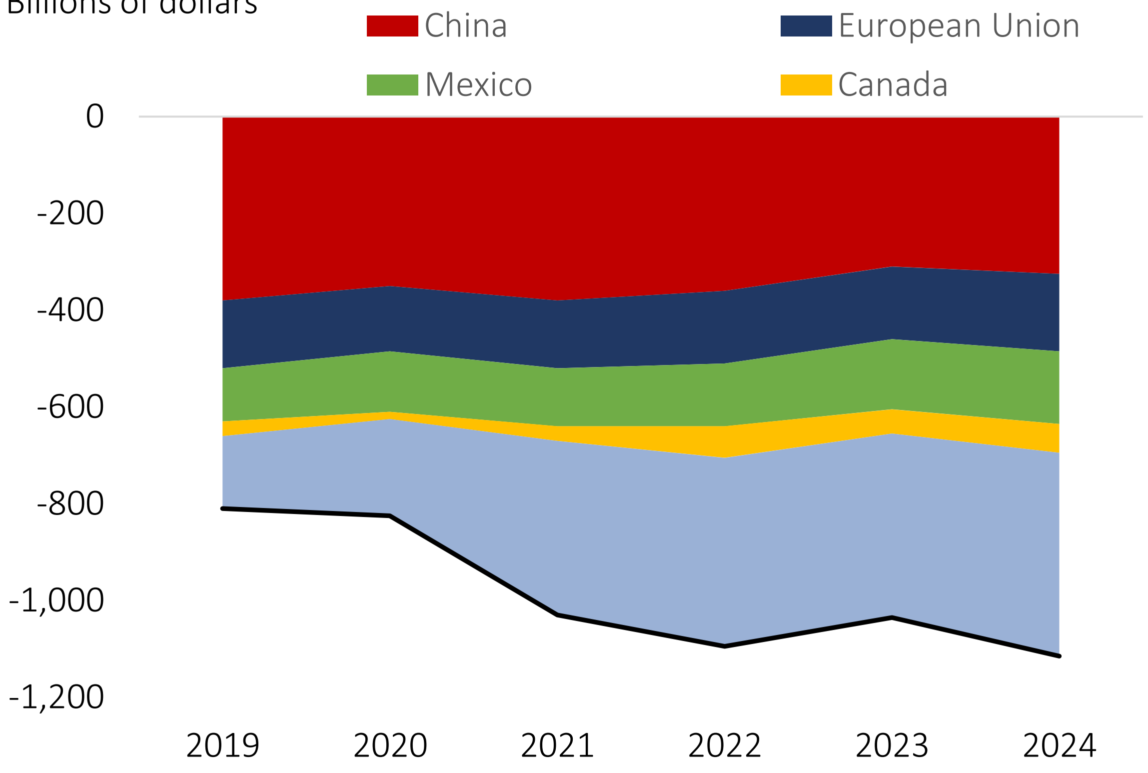
The near-term stakes of tariffs and trade

- In February 2025, the Bank for International Settlements highlighted the United States' announced new and increased import tariffs on partners with substantial trade surpluses
- China's 2024 surplus with the U.S. economy represented about $300 billion—1/3rd of China's total trade surplus and over 1/4th of the U.S. trade deficit
- The Bank for International Settlements estimates that tariffs (announced before the election) could reduce global GDP growth by up to 1.5 percentage points and U.S. GDP by over 2.0 percentage points

China's trade balance
Billions of dollars



U.S. trade balance
Billions of dollars



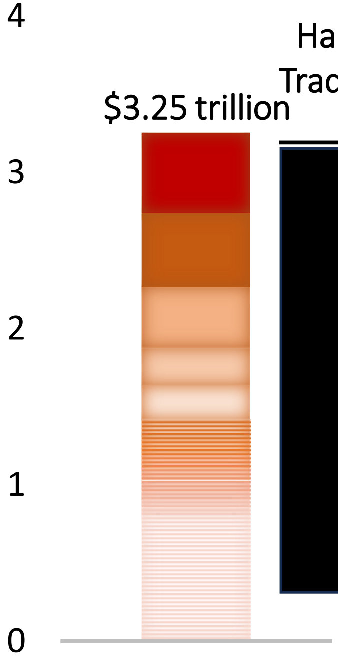
source: Bank for International Settlements (2025)

What drives U.S. imports?

- Five major product categories accounted for over $1.8 trillion in imports, making up nearly two-thirds of the U.S. trade deficit in goods
- The categories include high-tech computing, smartphones, passenger vehicles and parts, petroleum and refined products, and pharmaceuticals—products that are integral to daily consumer and industrial needs
- Crude oil and refined petroleum products, totaling $242 billion, rank fourth among U.S. imports. These imports are driven by the complexity of U.S. refining capacity, which relies on heavier crude grades, and regional supply gaps on the East and West Coasts that necessitate gasoline, diesel, and jet fuel imports

2024 U.S. imports for consumption by value

Trillion dollars



Harmonized Trade Schedule Code	2024 Imports (Billion dollars)	Primary goods	Main sources
84	$514 billion	High-perf. computing, laptops/notebooks, GPU/RAM, motherboards, aircraft engines, tractor engines, construction backhoes, catalytic converters	Mexico, China, Taiwan, S. Korea, Japan, Germany, France, Canada
85	$473 billion	Smartphones, lithium-ion batteries, electronic parts	China, Mexico, Vietnam, Thailand, Malaysia
87	$389 billion	Passenger vehicles and parts	Mexico, Germany, Japan, S. Korea, UK
27	$242 billion	Crude oil and petroleum refined products	Canada, Mexico, Saudi Arabia, Brazil,
30	$217 billion	Immunological products, vaccines, and pharmaceuticals	Ireland, Switzerland, Germany, Singapore, India, Belgium, Italy, China, Japan

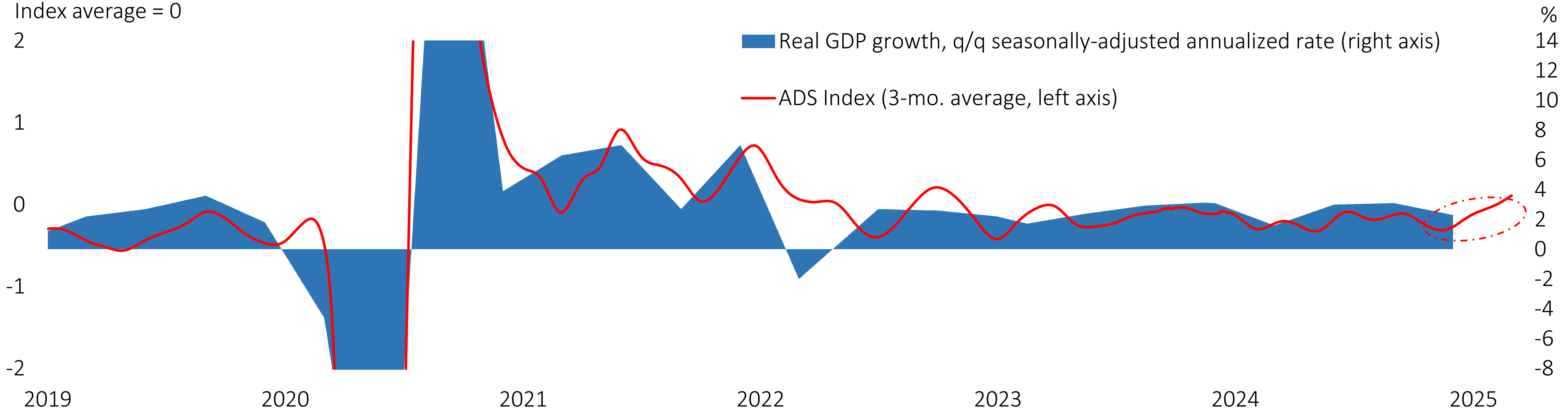
Subtotal: $1.83 trillion

sources: U.S. International Trade Commission; TXOGA analysis

Business conditions have remained conducive to U.S. GDP growth

- The ADS index, published by the Philadelphia Federal Reserve, provides timely insights into current and near-term economic conditions, helping businesses and policymakers anticipate shifts in growth and adjust strategies accordingly
- Its 3-month rolling average has reliably led historical GDP growth trends - and indicates accelerated economic expansion in Q1 2025

Aruoba-Diebold-Scotti business conditions index and U.S. real GDP growth



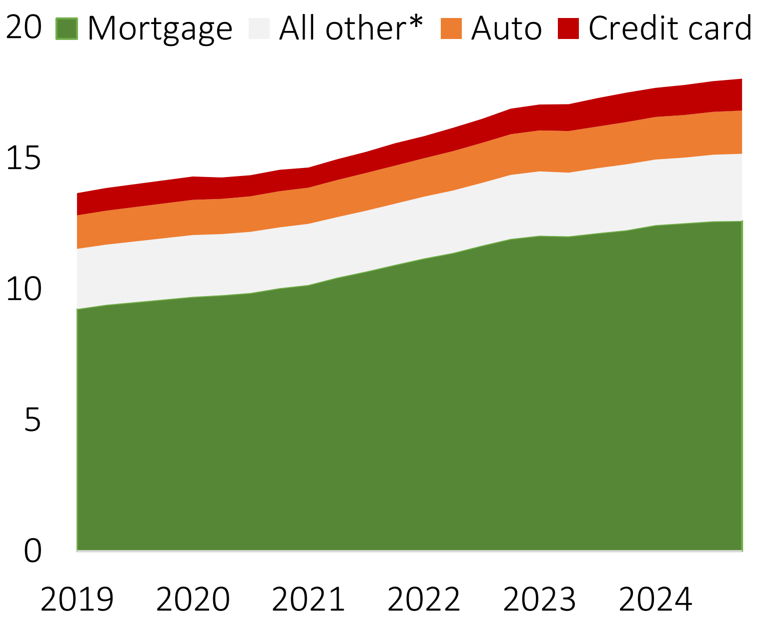
* The ADS Index includes weekly initial unemployment claims (source: DOL); monthly payroll employment (BLS); monthly industrial production (FRB); monthly real personal income less transfer payments (BEA); monthly real manufacturing and trade sales (BEA, CB); quarterly real GDP (BEA)

sources: Philadelphia Federal Reserve Bank; U.S. Bureau of Economic Analysis; TXOGA analysis

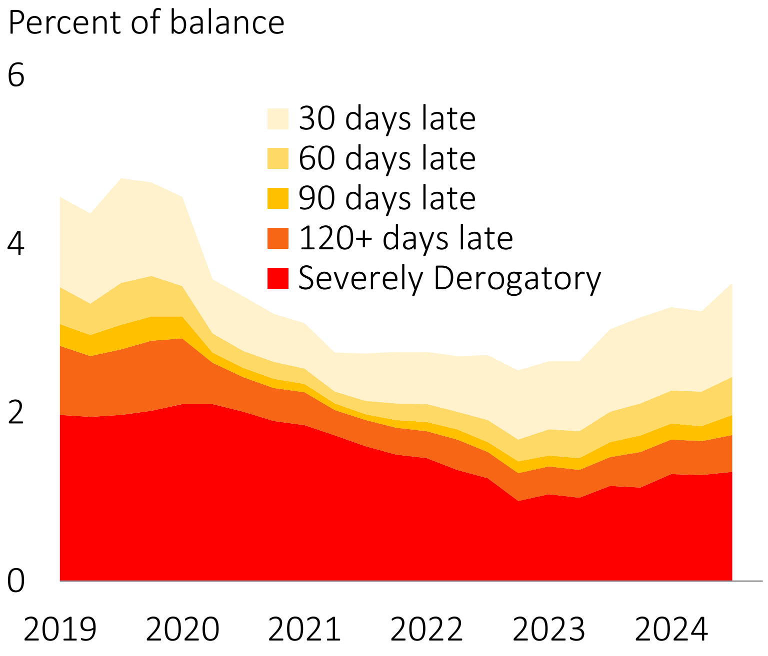
Signs of stress as U.S. consumers' debt burden reaches new highs

- U.S. household debt reached a record $18.04 trillion in Q4 2024, according to the New York Federal Reserve
- Increased serious delinquencies (90+ days) on credit card debt, auto loans, and mortgages appear to reflect the cumulative effects of the elevated rate environment, which particularly stress borrowers with variable-rate debt
- Rising delinquencies could constrain access to credit and dampen economic growth, given that consumer spending accounts for about 70% of U.S. GDP

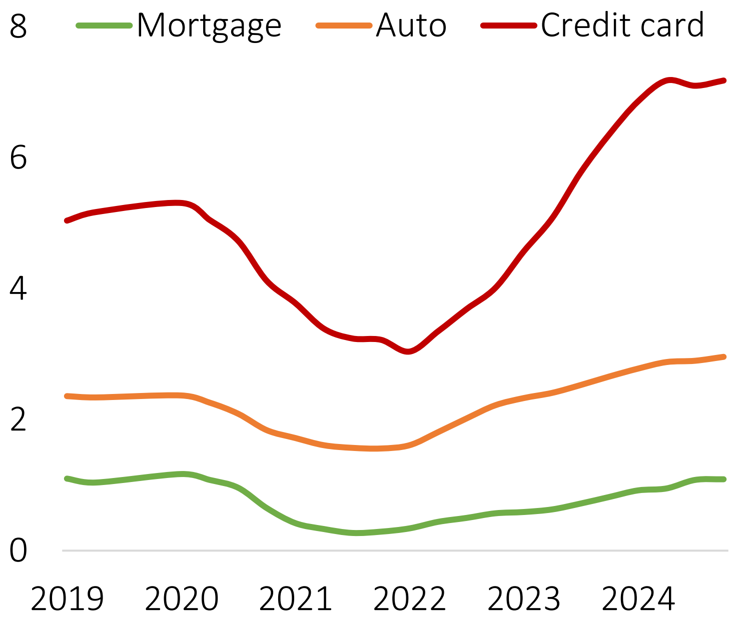
U.S. consumer debt



Total balance by delinquency status



New seriously delinquent balances by type**



*All other debt includes student loans, home equity revolving, and other

**90 days or more delinquent

source: New York Federal Reserve Bank

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Oil Markets

Global oil demand reached a record high in 2024 along with the economy -- and could exceed 104 mb/d in 2025

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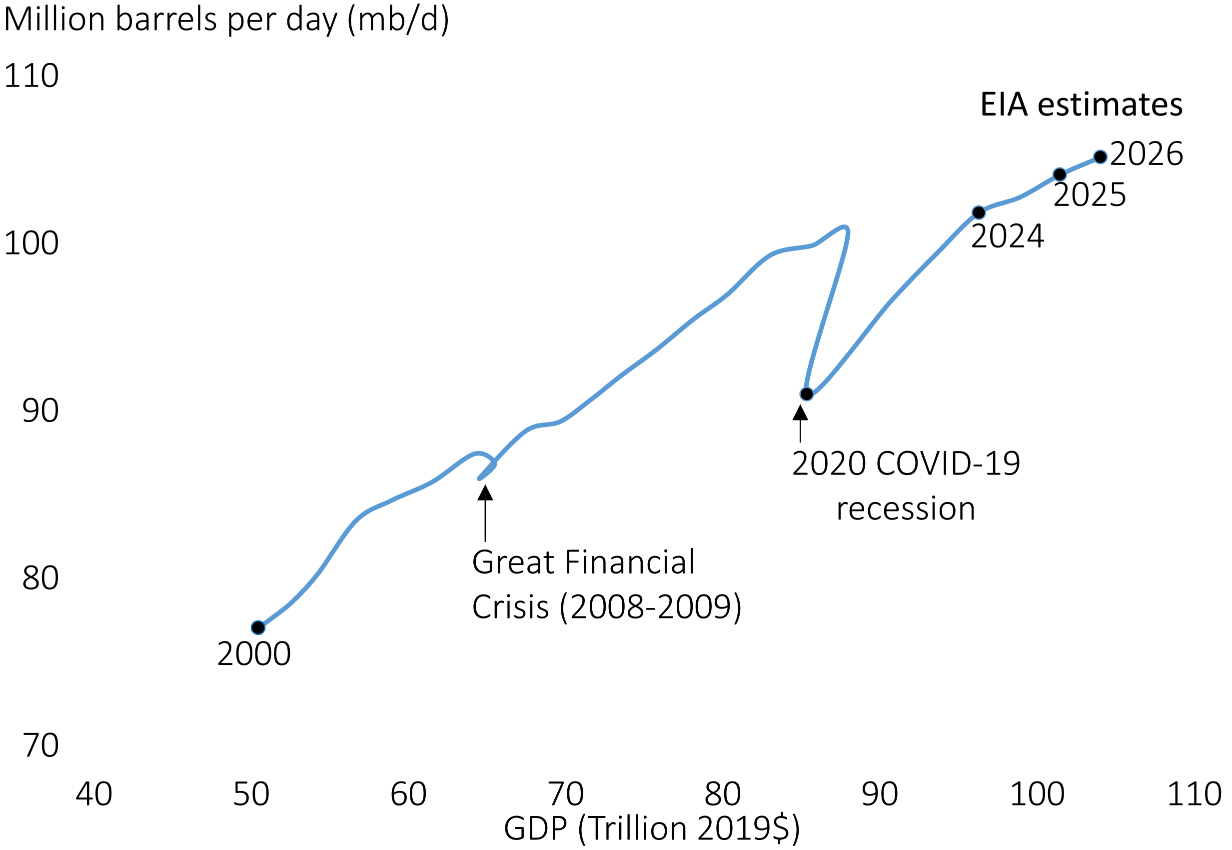
- Global oil demand could grow to a 3rd consecutive record high, from 102.8 mb/d in 2024 to 104.1 mb/d in 2025 and 105.3 mb/d in 2026 per EIA

Global oil demand and GDP*



*Market exchange rate basis. sources: U.S. Energy Information Admin.; International Monetary Fund; TXOGA analysis

Global oil headlines

OPEC+ to Begin Long-Delayed Supply Hike Amid Trump Pressure
Bloomberg, March 3, 2025

OPEC sticks to 2025, 2026 global oil demand growth forecasts
Reuters, February 3, 2025

IEA Slightly Lifts Oil Demand Outlook, Says Supply Surplus Narrowing
WSJ, February 13, 2025

Tariff war and global demand will affect oil markets
Financialpost, March 10, 2025

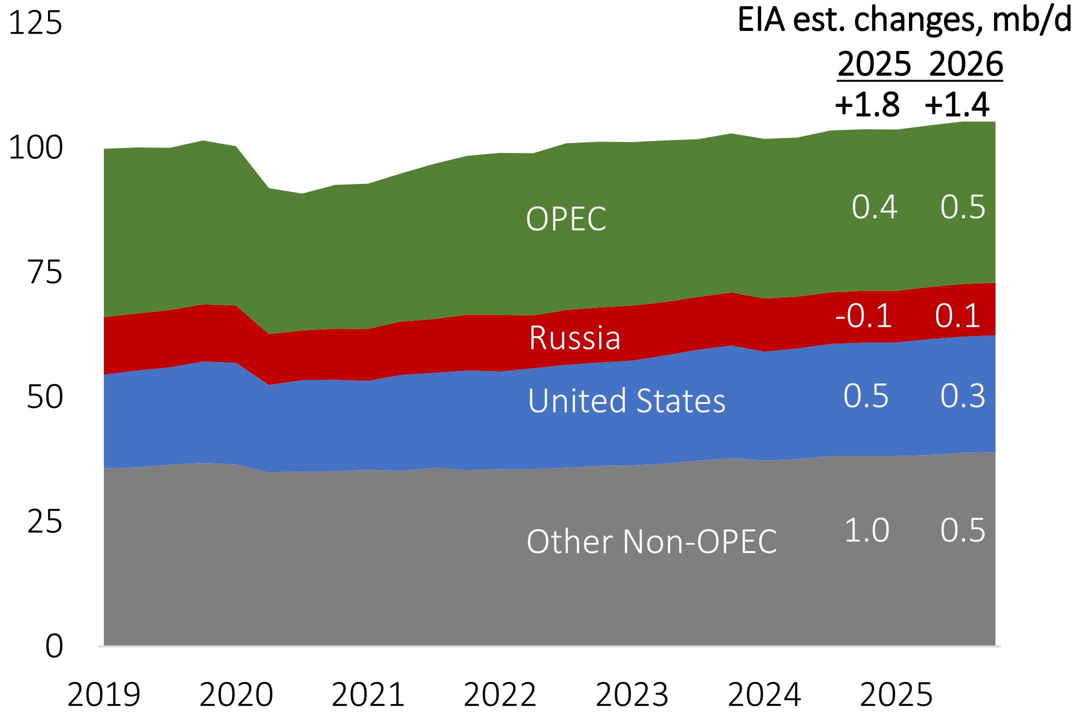
China's Fuel Production Cuts Could Undermine Global Oil Demand
Bloomberg, March 5, 2025

Global oil production and market balance

- EIA projects a 1.8 mb/d increase in global oil supply for 2025, driven by the U.S. and other non-OPEC producers, along with higher OPEC output
- Global oil inventory withdrawals continue per EIA, expanding to 0.8 mb/d by Q4 2025, corresponding with Brent crude oil prices of $74 on average in 2025, compared with approximately $70 per barrel currently

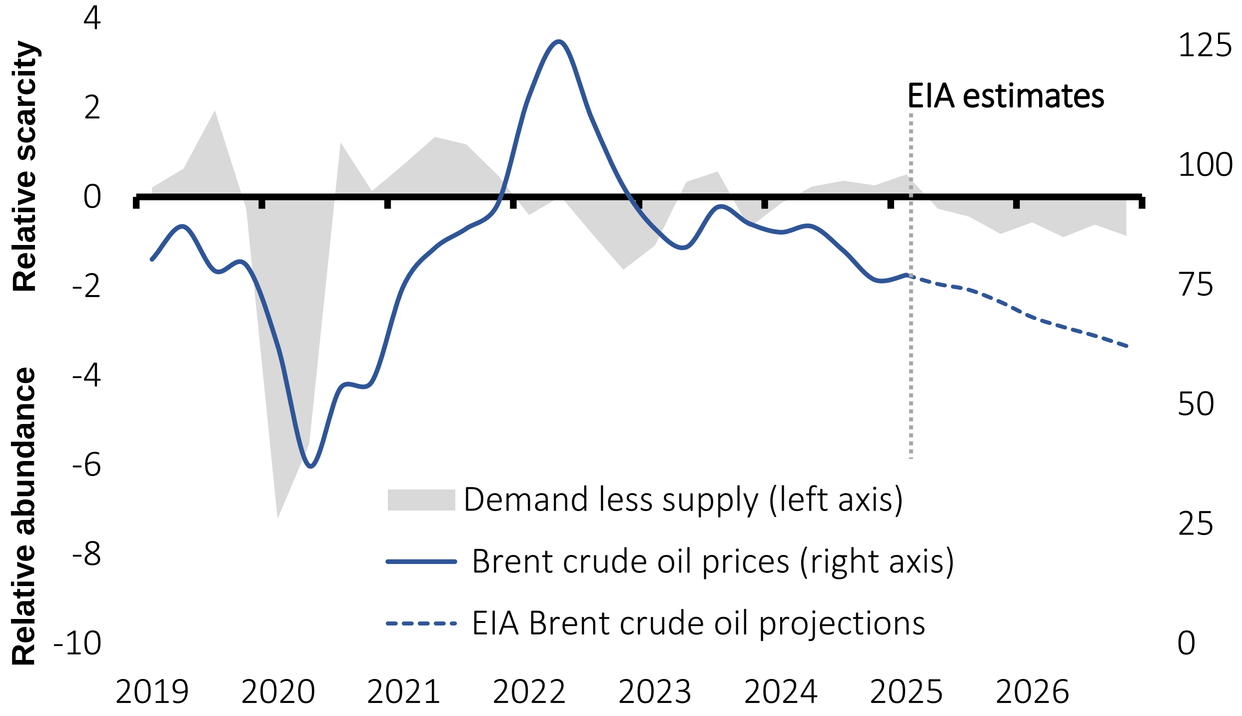
Oil production by country/region

Million barrels per day, mb/d



Global market balance & Brent prices

Million barrels per day (mb/d) 2024$/Bbl



sources: U.S. Energy Information Administration (Feb. 2025); TXOGA analysis

U.S. crude oil inventories have recently increased

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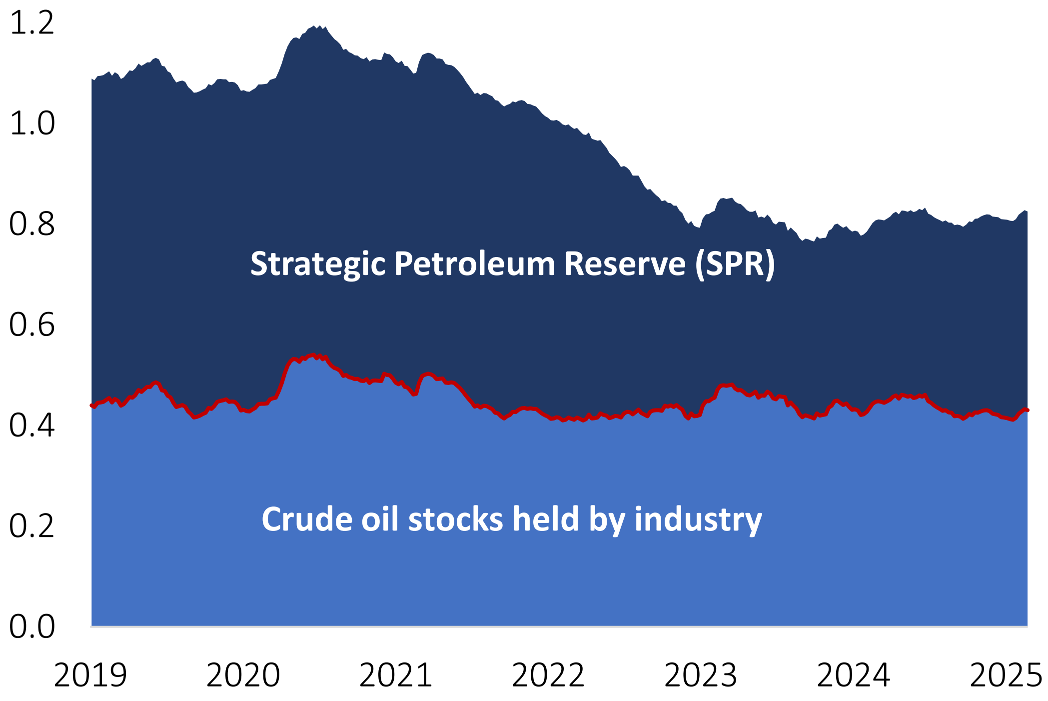
- Strategic Petroleum Reserves increased by 35.1 million barrels (9.7%) year-over-year-to-date as of February 28, 2025
- Crude oil stocks held by industry are at the 25th (lowest) percentile within the five-year range, but added over 22 million barrels over the past six weeks

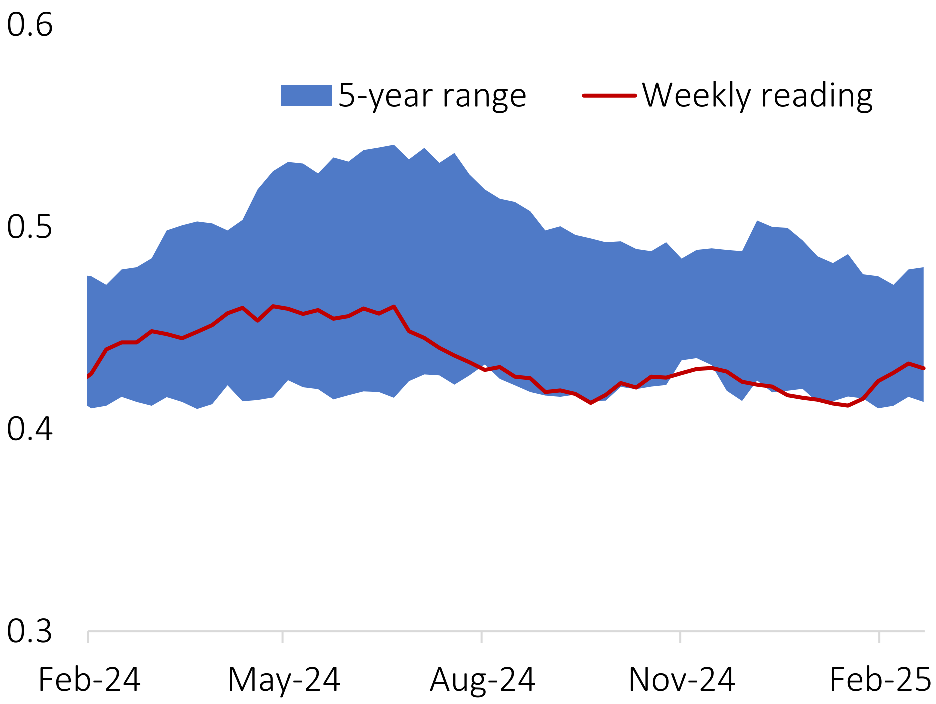
U.S. crude oil stocks

Billion barrels



U.S. crude oil stocks held by industry

Billion barrels



source: U.S. Energy Information Administration (EIA); TXOGA analysis

Oil futures and options activity have continued to be pro-cyclical with oil prices

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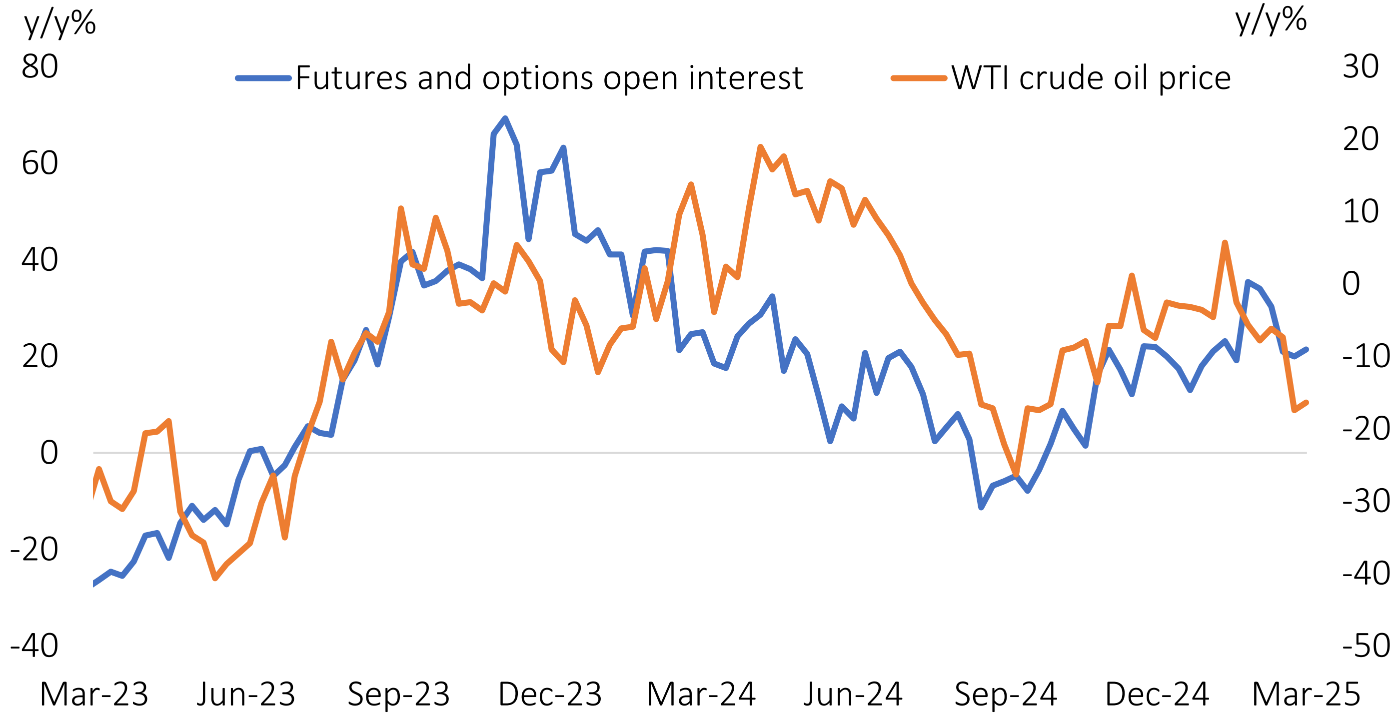
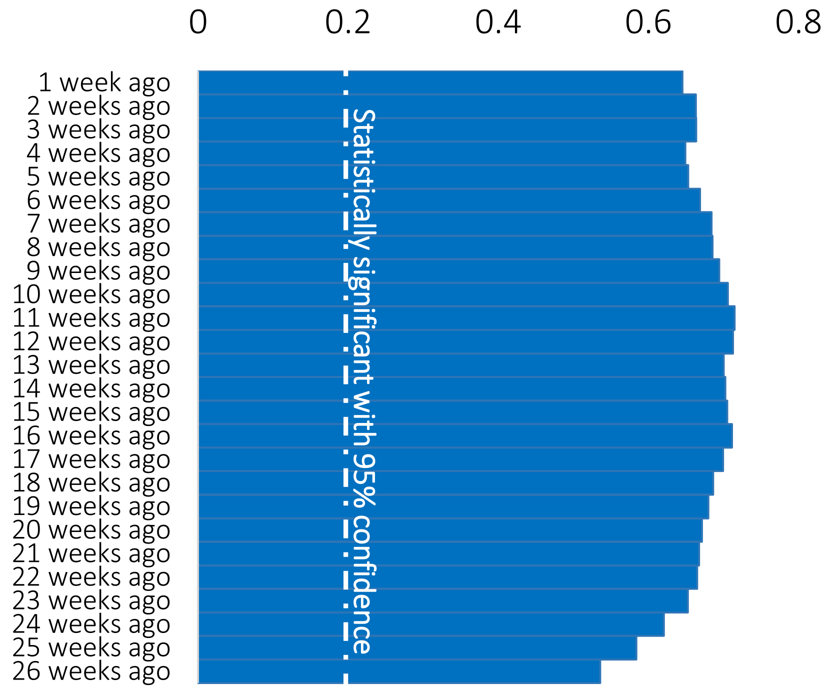
- Changes in WTI crude oil prices and past changes in the open interest in light sweet crude oil futures and options have exhibited a significant direct correlation as high as +0.7 since 2023
- Changes in light sweet crude oil open interest of up to 6 months prior have "Granger-caused" WTI price changes over the period; this is a temporal relationship, not causation, since external factors like geopolitics and production changes may influence both open interest and prices, confounding the analysis

Light sweet crude oil prices and open interest changes, year-over-year



Significant direct correlations between changes in crude oil prices and past open interest changes*

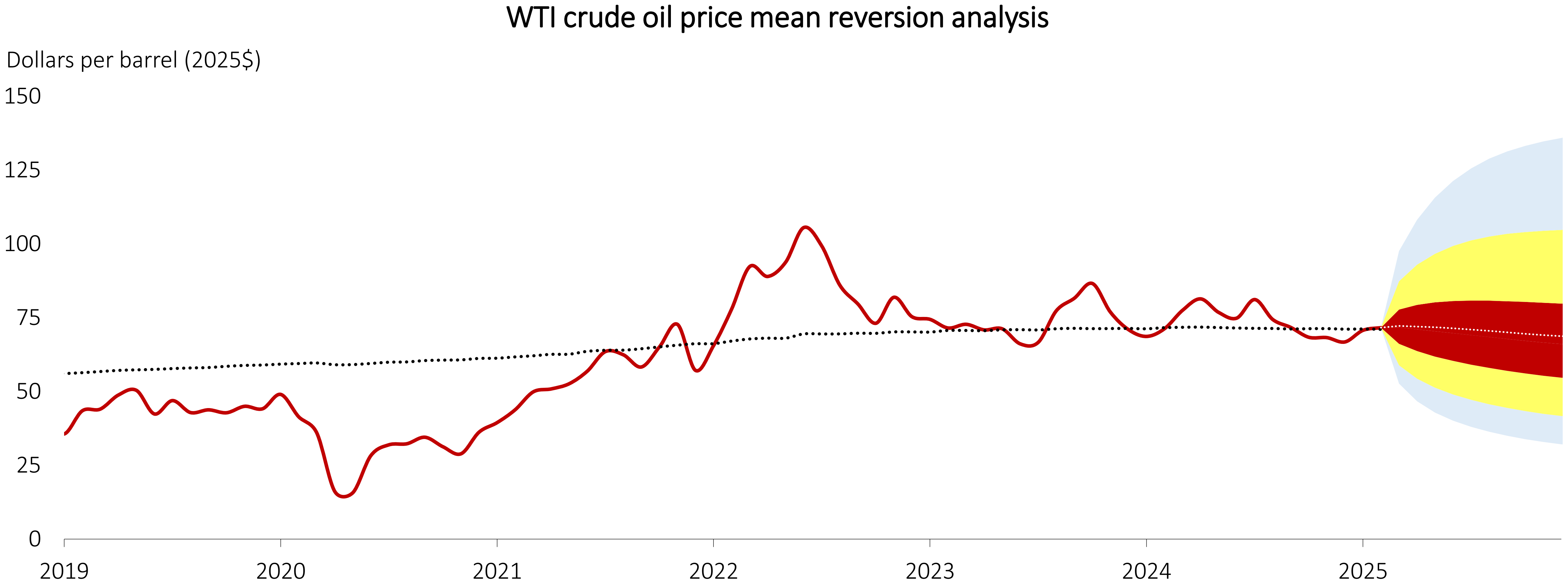


* Comparisons of WTI crude oil price changes year-over-year (y/y) with changes (y/y) in light sweet crude oil futures and options, from 1 to 26 weeks prior, as reported by CFTC

sources: Commodity Futures Trading Commission (CFTC); TXOGA analysis

Crude oil futures prices are aligned with their historical mean reversion threshold

- The futures strip has remained backwardated (that is, futures prices currently are lower than spot prices)
- Confidence intervals based on past prices show the potential for greater upside than downside



sources: CME Group; Bureau of Labor Statistics; TXOGA analysis

Natural Gas Markets

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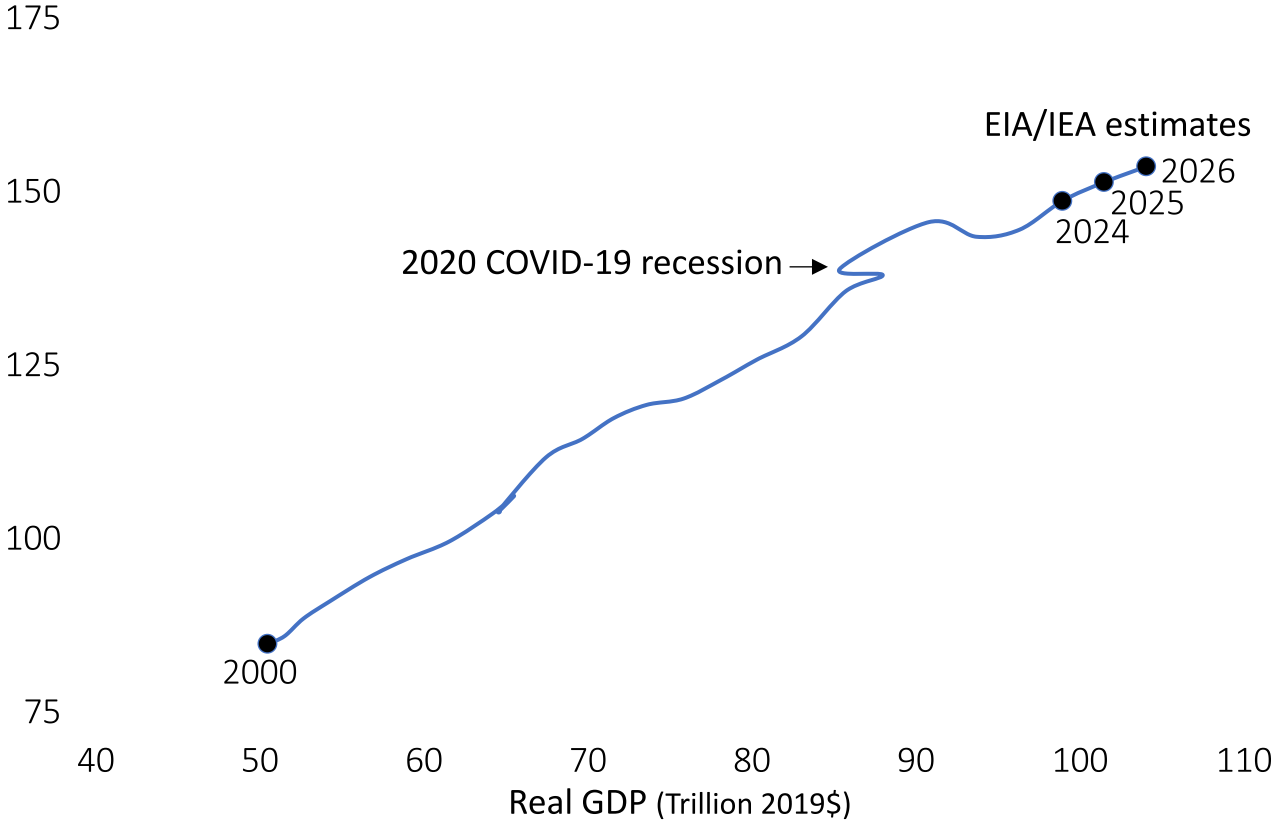
Global natural gas demand could reach new record highs in 2025 and 2026

- Global natural gas demand hit a record 148.7 trillion cubic feet in 2024 and is projected to increase by 1.8% in 2025 and 1.5% in 2026
- About 75% of global natural gas demand growth stems from Emerging Markets and Developing Economies, so the continued expansion of liquefied natural gas (LNG) infrastructure is a key – and remains subject to trade and tariff developments

Global natural gas demand and GDP*

Trillion cubic feet (tcf)



*Market exchange rate basis   sources: EIA; IEA; IMF; TXOGA analysis

Global natural gas headlines

Economic Headwinds Could Limit LNG Imports from Natural Gas Demand Leaders China and India
NGI, February 5, 2025

Decline of Russian gas dominance in Europe
Carole Nakhle, February 5, 2025

Natural Gas Climbs As Canada Retaliatory Tariffs Target U.S. Grid
Investor's Business Daily, March 11, 2025

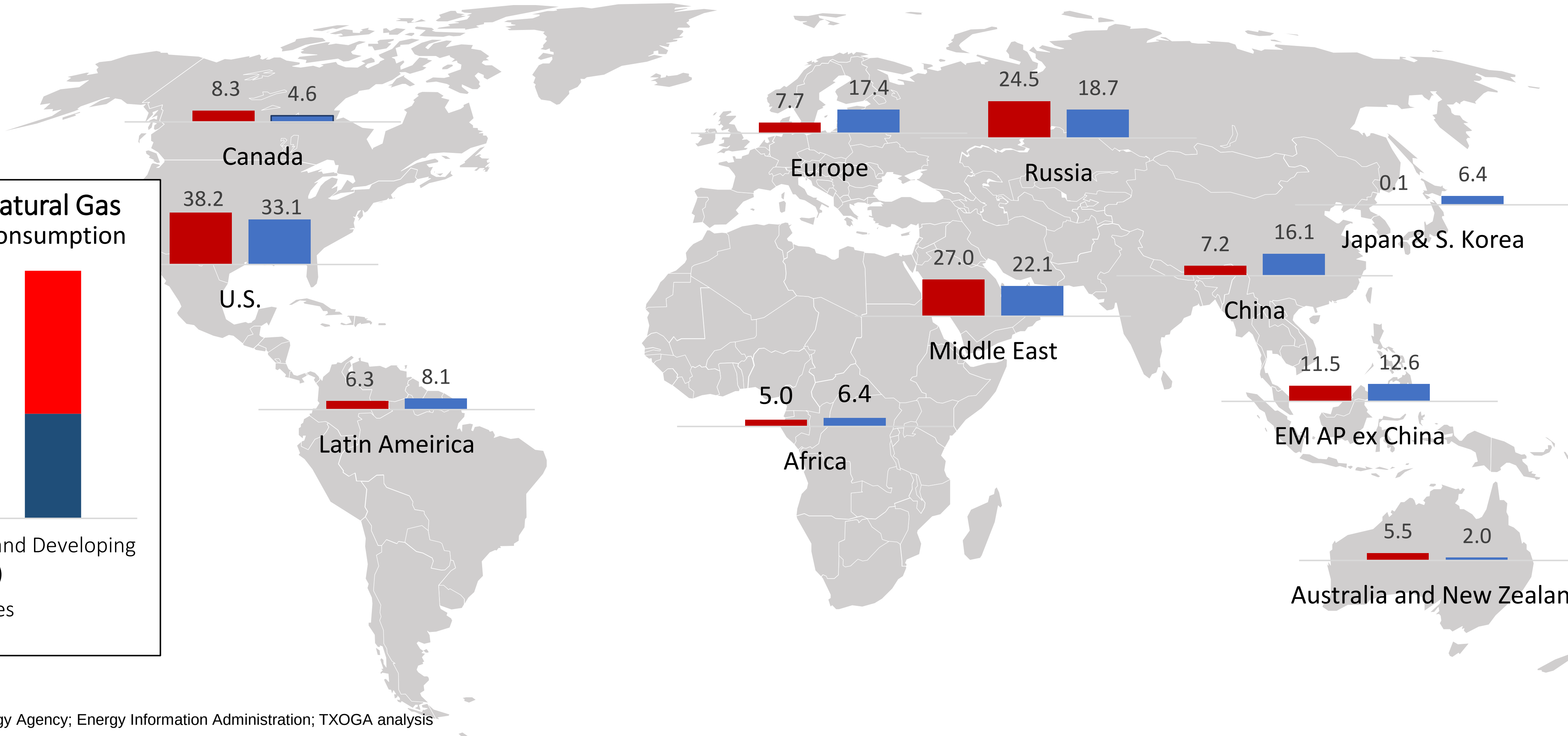
The importance of US LNG for economic growth and the global energy transition
Dan Yergin and Madeline Jowdy, Atlantic Council, February 20, 2025

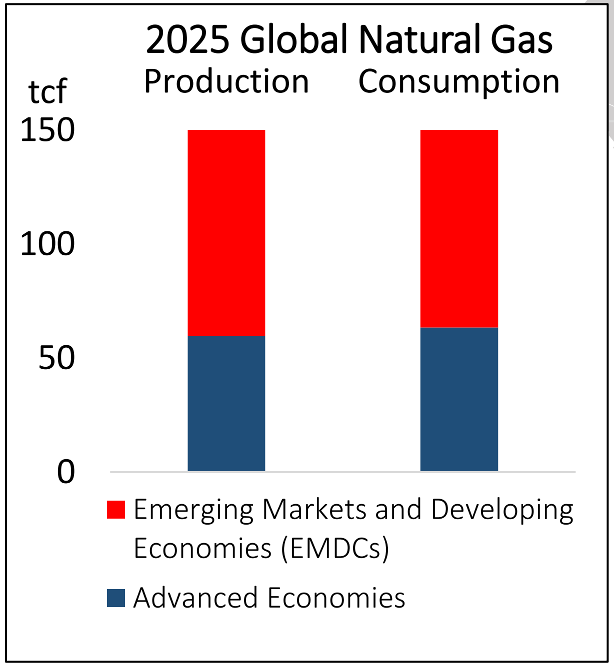
US LNG Exports: Truth and Consequence Revisited
Ken Medlock, Rice Baker Institute, February 17, 2025

2025 global natural gas production and consumption

- Emerging economies collectively have continued to lead global natural gas production and consumption growth
- U.S. natural gas production and LNG exports lead the world

2025 Global natural gas production versus consumption – Trillion cubic feet (tcf)





sources: International Energy Agency; Energy Information Administration; TXOGA analysis

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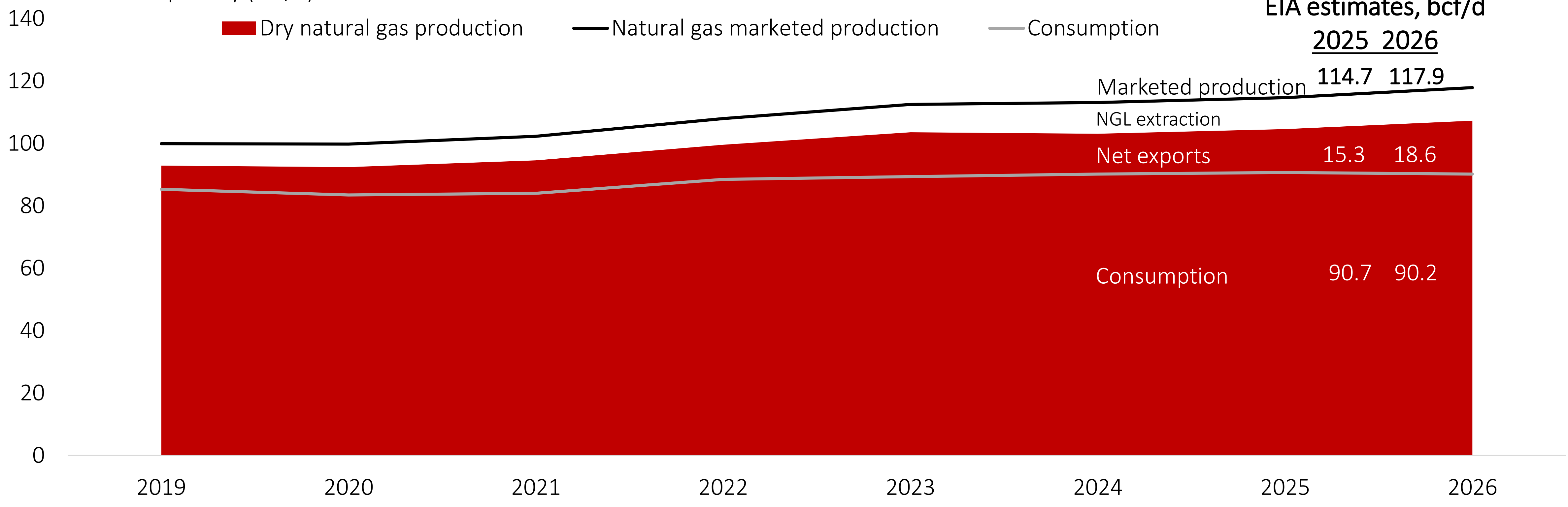
U.S. natural gas marketed production and net exports have continued to set record highs

- U.S. marketed natural gas production reached 113.6 bcf/d in Q1 2025 and could rise to a record high of 117.9 bcf/d in 2026 per EIA
- U.S. natural gas net exports could rise from 12.6 bcf/d in 2024 to 15.3 bcf/d in 2025 and 18.6 bcf/d in 2026
- Texas is producing over 33 bcf/d of marketed natural gas—near record levels—including approximately 28 bcf/d of dry natural gas and 3.9 mb/d of NGLs in Q1 2025, according to TXOGA estimates

U.S. natural gas production and disposition

Billion cubic feet per day (bcf/d)



sources: U.S. Energy Information Administration (Feb. 2025); TXOGA analysis

U.S. natural gas storage reflects strong seasonal withdrawals

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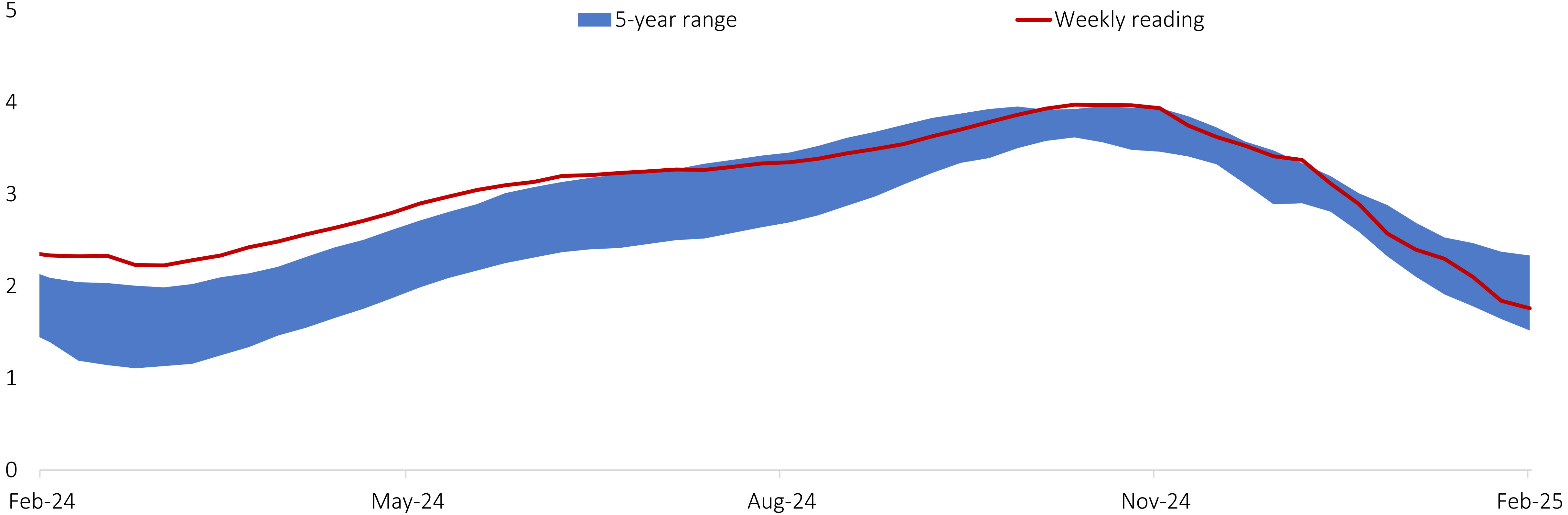
- Working gas storage levels reflect economic and seasonal conditions
- Working gas in underground storage fell by 4.3% w/w to 1.76 tcf as of Feb. 28. Storage levels decreased by nearly 40% over the past six weeks, which ranked among the largest 3% of withdrawals over any six weeks since 2010

U.S. weekly working gas storage

Trillion cubic feet (tcf)

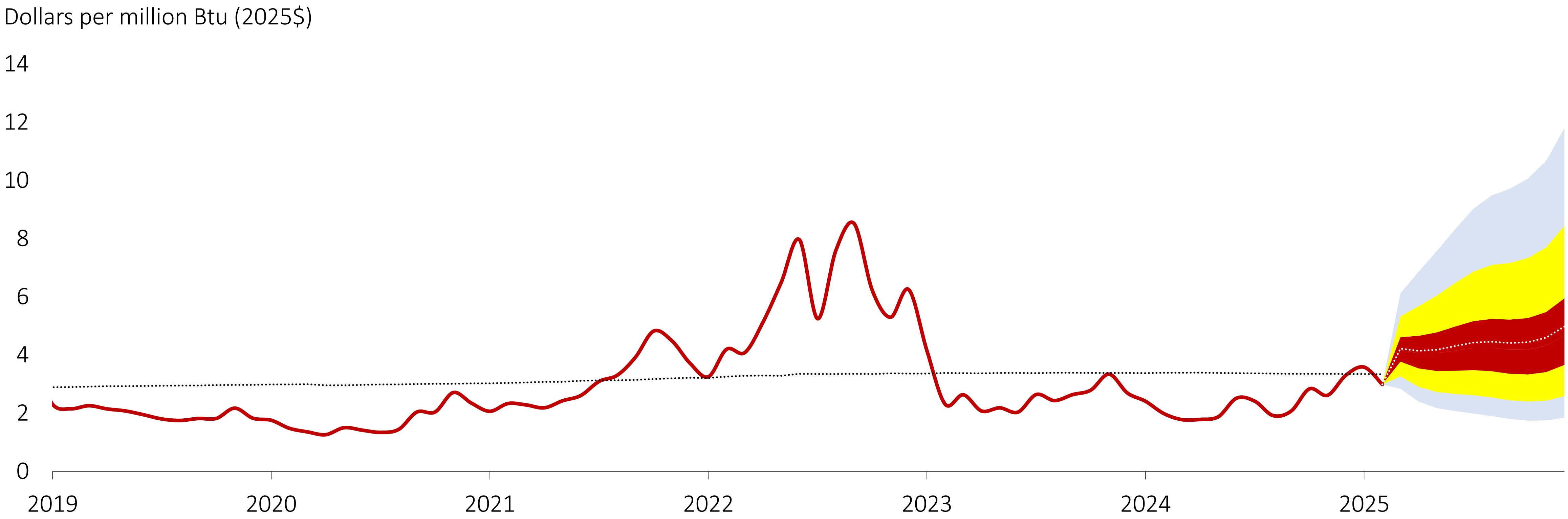


sources: U.S. Energy Information Administration; TXOGA analysis

Near-term natural gas futures prices currently exceed their historical mean reversion threshold

- Futures prices currently exceed their historical mean reversion threshold
- Futures prices are in contango (that is, spot prices are lower than futures prices). Confidence intervals based on past prices show the potential for greater upside than downside

Natural gas price mean reversion analysis



sources: U.S. Energy Info. Admin.; CME Group; Bureau of Labor Statistics; TXOGA analysis

Productivity, Jobs, and Wages

Rig productivity gains have continued to enable production growth

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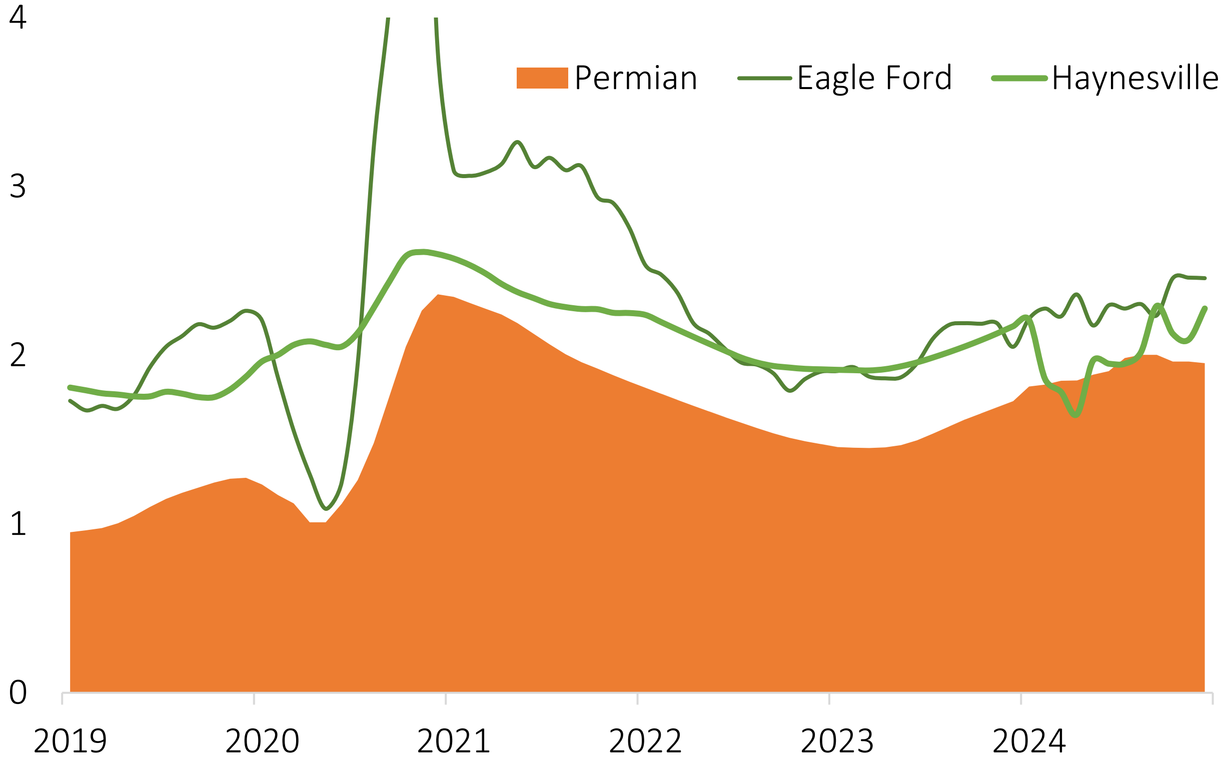
- **Permian and Eagle Ford productivity lead.** EIA estimates for January 2025 indicate rig productivity rose by 7.6% y/y in the Permian Basin, 10.8% y/y in the Eagle Ford, and 3.0% y/y in the Haynesville

Texas rig productivity by basin – new monthly production per rig

Thousand barrels per day oil-equivalent, kb/doe



sources: Energy Information Administration; TXOGA analysis

Oil and natural gas innovation headlines

Shale Oil Is More Likely To Boom Than Peak
Forbes, December 3, 2024

Drilling advances: Is it always only about people?
WorldOil.com, November 2024

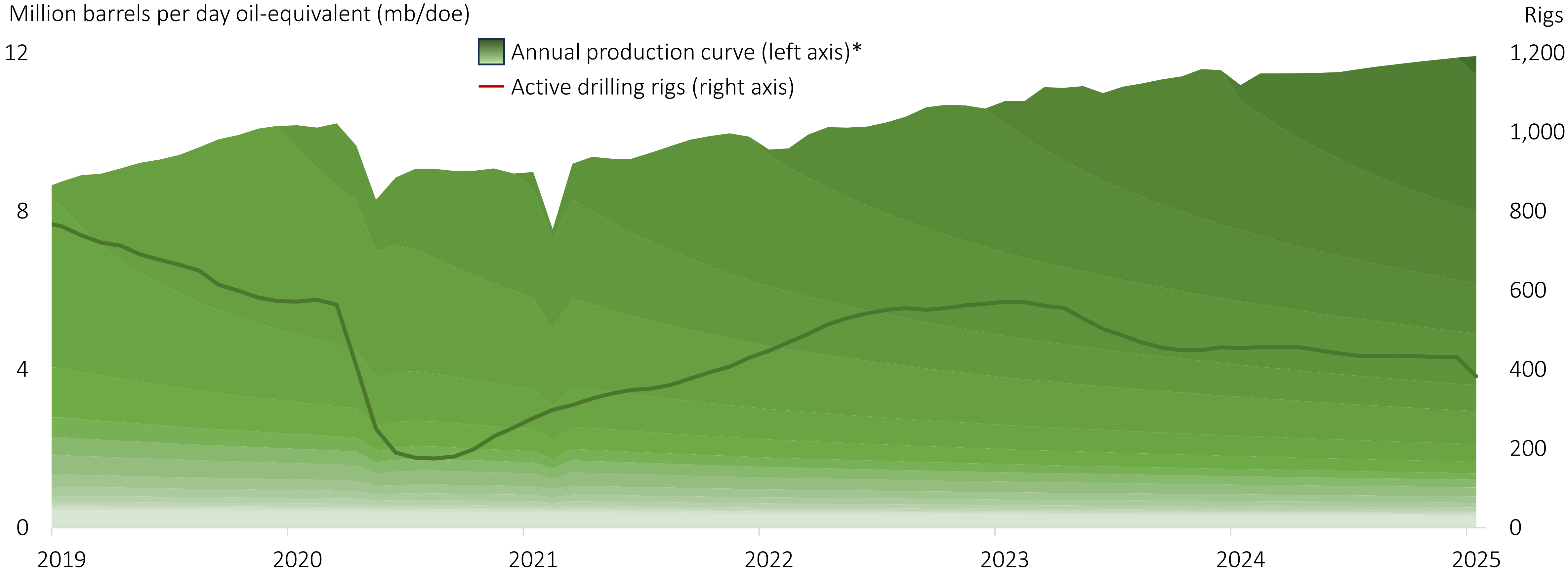
Automation, Robotics Transforming How Industry Drills Wells
JPT.SPE.org, November 2024

The Evolution of the Land Drilling Rig
JPT.SPE.org, October 2024

Led by the Permian Basin, Texas' shale oil and tight gas production has risen despite the utilization of fewer rigs

- EIA estimates show oil and natural gas production changes across Texas shale basins in January 2025, with the Permian increasing by 7.4% y/y, Eagle Ford by 7.6% y/y, and Haynesville by 3.4% y/y

Texas oil and natural gas production across major shale basins



*Crude oil, condensates, natural gas gross withdrawals from Texas' Anadarko, Eagle Ford, Haynesville, and Permian Basin production regions.
sources: Energy Information Administration; Texas Railroad Commission; TXOGA analysis

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